



Step-By-Step Guide to Raising Oak Trees from Seed

A nature-oriented classroom or take-home activity that everyone can enjoy.

Throughout Wisconsin's history, oak trees have provided shelter, enjoyment and food to humans and wildlife species. Growing oak trees from seed is a practical and fun way to learn about seedling germination and the life cycle of a tree. Oaks, either from the white oak or the red oak group, grow readily and relatively quickly from acorns. Though you could plant acorns outside in the fall and let nature take its course, there is a risk that they'll dry out, freeze, rot or be lost to foraging rodents. Planting them in pots is a more reliable approach. The steps described here also work for other nut trees, such as hickory and walnut.

The genus *Quercus*, to which all oaks belong, contains two major groups in North America: the white oaks and the red oaks. Acorns in the white oak group take one year to mature, while red oak acorns mature in two years. Species in the white oak group include bur, chinkapin, swamp white and white oaks. Species in the red oak group include black, northern pin and red oaks. A field guide will help you identify individual trees.

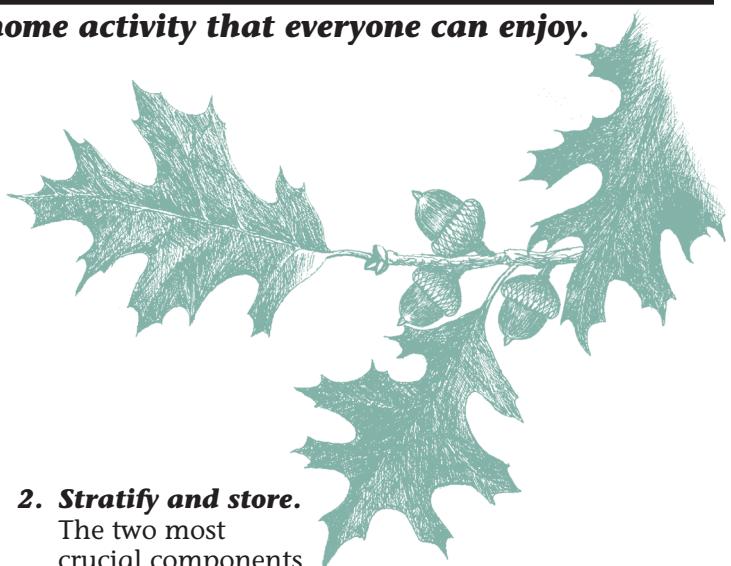
1. Collect acorns.

The best way to obtain



good-quality acorns is to collect them in mid-fall from healthy, vigorous trees. You will know when acorns are ready to be harvested when they begin falling from the tree. Gather acorns from tree branches or the ground. Lawns or paved areas make great collection sites because acorns are easy to spot and harvest. Be sure to identify the trees you collect from so you know what species you are growing.

To determine if an acorn is ripe, simply wiggle the cap. If the two separate easily, the acorn is ready. Then inspect your harvest more closely. Healthy acorns look plump and feel relatively heavy for their size. Discard any that are cracked, moldy, hollow, feel light in weight or have small holes. A good way to identify discards is to place the acorns in a bucket of water – those that float are empty and will not produce a seedling. Because acorns lose viability quickly if they dry out, it's a good idea to proceed to the next step right away.



2. Stratify and store.

The two most crucial components in caring for acorns is not allowing them to dry out and not allowing them to heat up. Many, but not all, oaks require cold treatment. For instance, red oak acorns need a period of cold to stimulate germination, while white oak acorns can be planted immediately or refrigerated for later planting.

Fulfilling their need for a cool, moist period is easy to do indoors through a process called *stratification*.

To stratify, place a handful of acorns in a plastic bag. Add an equal volume of moist, well-drained sand, a sand-moss mixture or sawdust. Seal the bag loosely, label it with the species and date, and store it in a refrigerator set at 40°F. Check acorns periodically to make sure they are just barely damp. After 30 to 90 days have passed, an embryonic root, called a *radicle*, will emerge from the seeds. Once several acorns have sprouted, prepare to plant all of them.



- 3. Plant the acorns.** Due to the very long taproot produced by oaks, a deep container (more than 8 inches deep) is best for planting. Make sure the pots have drainage holes at the bottom. One option for a homemade pot is to use a cardboard one-quart milk carton with $\frac{1}{2}$ -inch holes cut into the base.

Wash pots well and fill them to within an inch of the top with moistened commercial potting mix or a mix of equal parts loam, sand and peat. The potting soil sold at most nurseries is excellent. Place the acorns about an inch below the surface, deeper if the acorn is particularly large. Plant one seed in each container and cover with $\frac{1}{2}$ -inch of potting mix.

- 4. Care.** Water the pots immediately after planting, and thereafter whenever the top inch or two of soil is dry. Keep the soil moist but aerated. Oak seedlings can grow well outside in partial shade, however, for indoor growth, full sun is needed. Wherever they are stored, seedlings should be protected from freezing weather, drying winds and curious rodents.

Don't allow an oak seedling's taproot to grow out of the bottom of the container, as this will break the root. If seedlings are grown indoors, place them outside, in a protected area, after the last spring frost so they can become acclimated to the elements. If possible, seedlings should be transplanted as soon as the first leaves open and before extensive root development occurs.

Outdoor planting should be done in March, April or May (based on your location in Wisconsin) so seedlings have time to establish themselves before the heat of summer. Even if seedlings will remain in pots for a year, they should be placed outside from spring through fall. Exposure to full sun and wind will produce stronger, hardier growth.

When transplanting your oak seedlings, the planting hole should be twice as wide and deep as the pot and roots. Carefully remove the roots and set in the hole with the *root collar* (the place where the stem meets the root system) at ground level. Fill the hole with soil, firmly tamp and water thoroughly.



- 5. Enrichment.** Students can use acorns (as well as a variety of other tree seeds) to learn skills such as comparisons, measurements of size and weight, and observations of color, texture and smell. They may enjoy raising oak seedlings to plant at home, or to sell and raise funds for outdoor school forest supplies, classroom activities or community service projects.

Helpful websites

Dichotomous Tree Identification Key for Students:
<http://www.dnr.wi.gov/org/caer/ce/ek/veg/treekey/index.htm>

http://www.uwsp.edu/cnr/leaf/Students/tree_id.aspx

Determine when to plant by looking at the typical dates of the last spring frost in your area:
<http://www.wisconline.com/almanac/gardening/springfrost.html>

Proper Tree Planting:

www.uwsp.edu/cnr/leaf/PowerPoints/TreePlanting.ppt
<http://dnr.wi.gov/forestry/publications/newtreeplanting.pdf>

